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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/595,259

03/31/2006

Issey Yamamoto

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09/05/2008

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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT

PAPER NUMBER

2841

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/595,259	<b>Applicant(s)</b> YAMAMOTO ET AL.	
	<b>Examiner</b> Ishwar (I. B.) Patel	<b>Art Unit</b> 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-19, 22, 24, 25 and 29-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This action is in response to amendment filed on May 16, 2008.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 16-18, 24, 30 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Kondo (US Patent No. 6,667,443).

Regarding claim 16, Kondo in the embodiment of figure 6A (including the detail structure as shown in figure 3A-3E, 4A-4B) discloses an internal conductor connection structure comprising: an insulator substrate (101 formed of insulating layers 21); line conductors (22) disposed in the insulator substrate (see figure); and at least two via conductors adjacent each other (24) at a predetermined interval in the insulator substrate (see figure), at least one of the at least two via conductors including a continuous via conductor arranged to extend in a direction away from the other via conductor (via on the left has continuous via as shown in figure 6A); wherein the at least one of the at least two via conductors is connected to one of the line conductors (22) through the continuous via conductor (see figure), the continuous via conductor has

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a dimension in a direction in which the line conductors extend that is, greater than a dimension of the at least two via conductors in the direction in which the line conductors extend (as the via conductor is about 70  $\mu\text{m}$  diameter, whereas the continuous via conductor as dimension more than 250  $\mu\text{m}$  (column 12, line 53-68 and column 15, line 45-60).

Regarding claim 17, Kondo further discloses a connecting portion of the line conductor to the continuous via conductor or a connecting portion of the continuous via conductor that is connected to the line conductor is arranged to be a connecting land having an area larger than the connecting portion of the other conductor (see figure, 6A).

Regarding claim 18, Kondo in the embodiment of figure 6A (including the detail structure as shown in figure 3A-3E, 4A-4B) discloses a multilayer substrate comprising: a laminate (101) including a plurality of laminated insulator layers (21); at least first and second via conductors (24) extending inside the laminate from positions adjacent to each other at a predetermined interval from a first main surface of the laminate (see figure); a first line conductor (22) connected to the first via conductor (via on the left side of the figure), the first via conductor including a first continuous via conductor arranged to extend in a direction away from the second via conductor (via on the left has continuous via as shown in figure 6A); wherein the first via conductor is connected to the first line conductor through the first continuous via conductor (see figure).

Regarding claim 24, Kondo further discloses a connecting portion of the first line conductor to the first continuous via conductor or a connecting portion of the first continuous via conductor to the first line conductor is arranged to be a connecting land larger than the connecting portion of the other conductor (see figure 6A).

Regarding claim 30, Kondo further discloses each of the via conductors and the line conductors individually include an electrically conductive material containing silver or copper (column 8, line 30-40).

Regarding claim 31, Kondo further discloses the first continuous via conductor only partially overlaps with the first via conductor (see figure 6A).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 19, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo as applied to claim 18 above.

6. Regarding claim 19, Kondo discloses all the features of claimed invention including the first conductor including continuous via conductor and the second

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conductor as applied to claim 18 above but does not explicitly disclose a third via conductor. Kondo discloses a cross sectional view with the detail of only two via conductors including continuous vias. However, circuit boards with more numbers of via holes are old and known in the art to facilitate the more number of interconnection.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to provide the structure of Kondo with a third via conductor in order to facilitate the more number of interconnection.

Regarding claim 22, the modified board of Kondo further discloses first continuous via conductor and the second continuous via conductor penetrate through their respective insulator layers (see figure).

Regarding claim 25, the modified board of Kondo further discloses a connecting portion of the second continuous via conductor that is connected to the second line conductor or a connecting portion of the second line conductor that is connected to the second continuous via conductor is arranged to be a connecting land that is larger than the connecting portion of the other conductor (see figure, 6A).

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo as applied to claim 18 above and further in view of Fukuta (US Patent No. 5,456,778).

Regarding claim 29, Kondo discloses all the features of the claimed invention as applied to claim 18 above including the insulating layers, but does not explicitly disclose

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the insulating layers are low temperature sinterable ceramic material. However, use of low temperature sinterable ceramic material, as disclosed by Fukuta (column 6, line 3-5) is old and known in the art for better via hole connection quality. Further the circuit board with ceramic material performs better in withstanding a higher temperature. Also, the structure of Fukuta is formed by laminating individual ceramic layers. The continuous via structures of Kondo will help in taking care of misalignment of the via structure.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to provide the structure of Kondo with the material as recited in the claim to have better performance at higher temperature.

Further, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960).

### ***Response to Arguments***

8. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on (571) 272 1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ibp  
August 30, 2008

/Ishwar (I. B.) Patel/  
Primary Examiner, Art Unit 2841